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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/046,295

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Karen Swider Lyons

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2321

7590

10/18/2006

Naval Research Laboratory  
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EXAMINER

BOS, STEVEN J

ART UNIT

PAPER NUMBER

1754

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



Art Unit: 1754

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 11,25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 11,25, "wherein said applying and heating introduce local ionic defects and increase the lithium capacity of said metal oxide" is new matter.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 11, "said metal oxide sample" lack(s) proper antecedent basis in the claim(s).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 11,17,18,23,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thome '707 in view of either Nishihara '181 or the Chemical Principles reference to show a statement of fact.

Thome suggests the process of heating a metal oxide, eg.  $V_2O_5$ , at 550°C for about 8 hours in a flowing gas mixture of air and water vapor and then cooling the metal oxide. The metal oxide appears to have the instantly claimed surface area; in any event the size of an article ordinarily is not a matter of invention, In re Rose 105 USPQ 237. See cols. 5,6. Air itself contains water vapor, ie.  $H_2O$  gas. See Nishihara, col. 2, line 23 and the Chemical Principles reference.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping

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portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, *In re Malagari*, 182 USPQ 549.

Claims 11,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Howard, Jr. '477 in view of either Nishihara '181 or the Chemical Principles reference to show a statement of fact.

Howard, Jr. suggests the process of heating a metal oxide sample, eg.  $\text{LiMn}_2\text{O}_4$ , in flowing air. Air contains water vapor or  $\text{H}_2\text{O}$  gas according to Nishihara, col. 2, line 23 and the Chemical Principles reference. The metal oxide sample appears to have the instantly claimed surface area; in any event the size of an article ordinarily is not a matter of invention, *In re Rose*, supra.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, *In re Malagari*, 182 USPQ 549.

Claims 11,17,18,19,23,24,25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chambers '005.

Chambers suggests the process of heating a sample of  $\text{V}_2\text{O}_5$  at  $500^\circ\text{C}$  in a stream of air saturated with water vapor, ie. a flowing gas mixture of  $\text{O}_2$  and  $\text{H}_2\text{O}$ . See col. 4 and example 1. The sample appears to have the instantly claimed surface area;

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in any event the size of an article ordinarily is not a matter of invention, *In re Rose*, supra.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, *In re Malagari*, 182 USPQ 549.

Claims 11,17,18,20-22,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shizuka '637 in view of either Nishihara '181 or the Chemical Principles reference to show a statement of fact.

Shizuka suggests the process of heating a metal oxide, eg.  $Mn_2O_3$ ,  $Co_3O_4$ , in air to 500°C for 6 hours at a rate of 5°C/min and then cooling the metal oxide to room temperature, ie. ambient, at a rate of 5°C/min. The metal oxide appears to have the instantly claimed surface area; in any event the size of an article ordinarily is not a matter of invention, *In re Rose*, supra. See examples 1-5,8. Air contains water vapor, ie.  $H_2O$  gas. See Nishihara, col. 2, line 23 and the Chemical Principles reference.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, *In re Malagari*, 182 USPQ 549.

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Applicant's arguments filed August 3, 2006 have been fully considered but they are unpersuasive.

Applicant argues that Thome does not teach a method of introducing defects in  $V_2O_5$  or other metal oxides.

However since Thome suggests the same process as that instantly claimed such defects would appear to also be introduced into  $V_2O_5$  by the taught process.

Applicant argues that Thome teaches the introduction of "fresh air" to the precursor to create  $V_2O_5$ ; that Thome does not teach exposing  $V_2O_5$  to "fresh air"; and that Thome does not teach that this "fresh air" will introduce defects in the  $V_2O_5$ .

However the instant claims are not so limited to "fresh air." Since Thome teaches that air is flowing countercurrently to the formed  $V_2O_5$  it would appear to be "fresh air." Since Thome suggests the same process as that instantly claimed such defects would appear to also be introduced into  $V_2O_5$  by the taught process.

Applicant argues that neither Nishihara nor the Chemical Principles reference are combinable with Thome to arrive at the instant process.

However each of Nishihara and Chemical Principles are used to show a statement of fact that air per se has water vapor content. Since Thome teaches the use of the same air that is defined and/or described by each of Nishihara and Chemical Principles the motivation to combine is clear.

Applicant argues that there is no reason, suggestion or motivation in Howard to combine an intercalation composition and a method for making such with the water

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vapor taught in Nishihara and the Chemical Principles reference to arrive at the present process of preparing a metal oxide with increased capacity for a battery cathode.

However Howard teaches the use of the same air that is defined and/or described by each of Nishihara and Chemical Principles the motivation to combine is clear. Also, since Howard suggests the same process as is instantly claimed such "increased capacity" would be formed in the metal oxides made by the taught process.

Applicant argues that there is no reason, suggestion or motivation in Chambers to apply a mixture of  $O_2$  and  $H_2O$  gas to a metal oxide to produce a defective metal oxide; and that a method of extracting  $V_2O_5$  from raw materials provides no reason, suggestion or motivation to produce the instant defective metal oxide.

However Chambers suggests the same process as that instantly claimed therefore such defective metal oxide would also be made by the taught process.

Applicant argues that there is no reason, suggestion or motivation in Shizuka to suggest that treating just one of the three starting materials of Shizuka would result in a defective metal oxide with increased capacity.

However the instant claims do not require just one starting material and furthermore Shizuka does treat a metal oxide, eg.  $Mn_2O_3$ ,  $Co_3O_4$ ,  $TiO_2$ .

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Bos whose telephone number is 571-272-1350. The examiner can normally be reached on M-F, 8AM to 6PM.

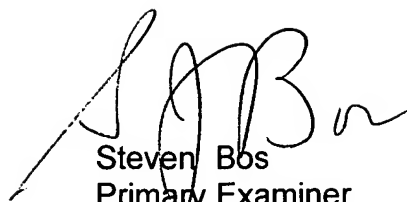
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stan Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in black ink, appearing to read 'SJB', is written over the printed name 'Steven Bos'.

Steven Bos  
Primary Examiner  
Art Unit 1754

sjb